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DEHS

County of San Bernardino Department of Public Health
DIVISION OF ENVIRONMENTAL HEALTH SERVICES

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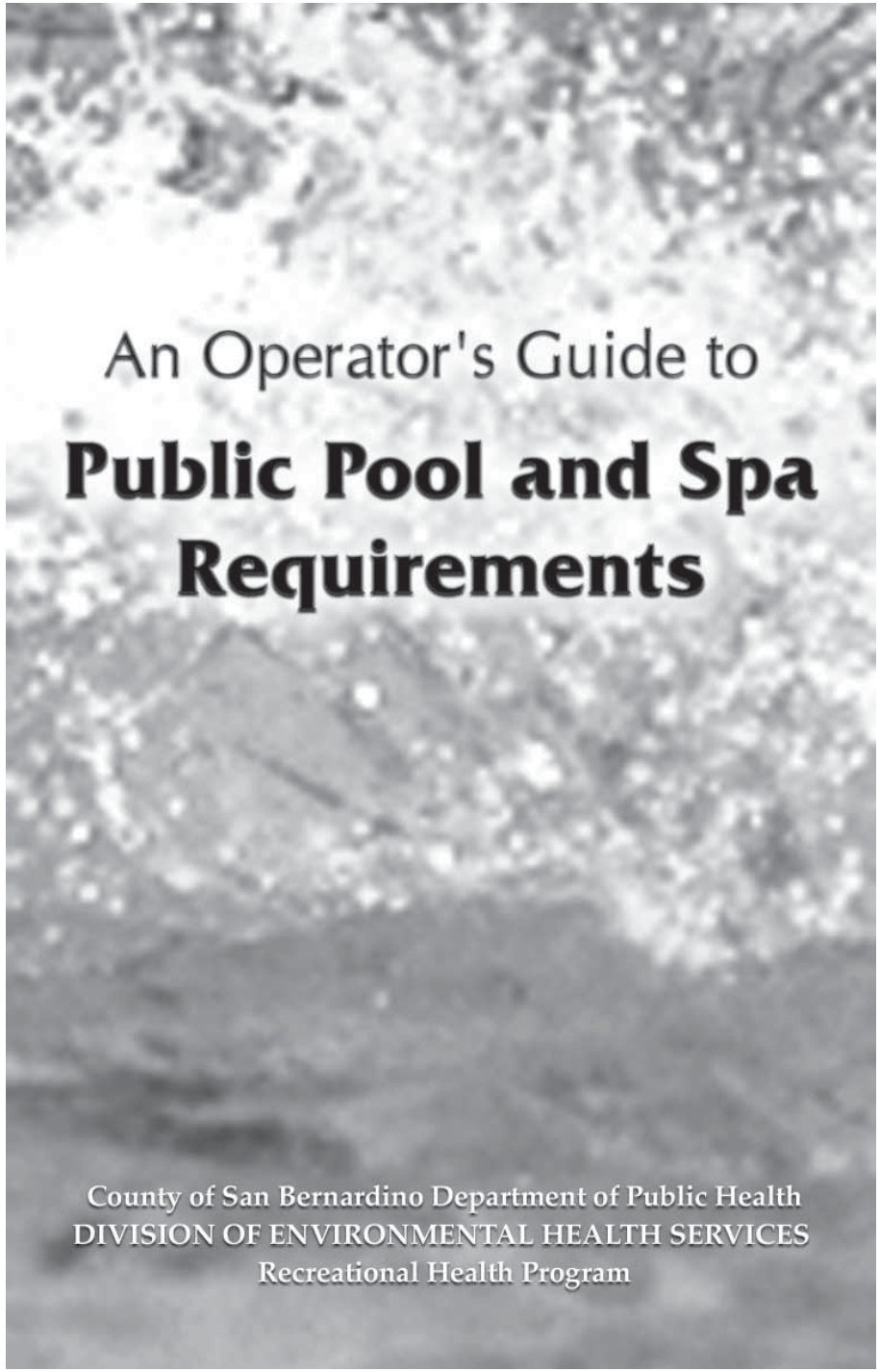

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Introduction

Swimming is one of the most popular sports in the United States and provides fun and good exercise. Make sure safety and health measures are taken to prevent accidents and illnesses.

RECORDS

Pool Supervision/Operation Records

Every pool shall be under the supervision of a person who is fully capable of assuming responsibility for all requirements relating to pool operation, maintenance and the safety of bathers. It is the operator's responsibility to:

1. Permanently post routine (daily, weekly) operating procedures in an accessible location.
2. Keep all manufacturers' instructions for operation and maintenance of mechanical and electrical equipment available.
3. Keep a daily record of all information regarding operation. The record should include a.m. and p.m. pH and chlorine readings, and the dates chemicals are added to the pool and/or spa. Cyanuric acid should be checked every 30 days. This record should be kept and maintained for inspection purposes, at least one year.
4. Apply for a yearly operational permit.

SAFETY

Pool Safety

Where Lifeguard service is required: (when a direct fee is charged for access)

1. There must be one life guard per 25 swimmers on duty to keep a continuous watch over the swimmers.
2. Lifeguards must hold a current Red Cross or YMCA Senior Lifeguard certificate or equivalent, be trained in emergency procedures for chlorine gas, if used, and know CPR.
3. Lifeguards shall not have any other duties when life guarding.

Where Lifeguard service is not required, a "No Lifeguard on Duty" sign must be posted in plain view.

Safety Equipment

Every swimming pool should have readily accessible for use:

1. At least one **rescue pole** with a body hook, not less than 12 feet long.
2. At least one **life ring** with a minimum exterior diameter of 17 inches, and a 3/16-inch line long enough to span the maximum width of the pool.
3. A **first aid kit** designed to handle at least 10 people.
4. Secure **handrails** and **ladders** as a means of entry and exit to and from the pool.
5. **Pool lights** that enable lifeguards to see every part of the pool.

Safety Signs

The following safety signs should be clearly posted, be clean and visible from the pool or spa with letters at least 4 inches high:

1. **Rescue Breathing** - Post step-by-step instructions (with drawings) of how to perform rescue breathing.
2. **Emergency Telephone Numbers** - The telephone numbers of the nearest emergency response unit (or 911) shall be clearly posted by the pool.
3. **Spa Warning Sign** - A sign must be posted at each spa pool which lists precautions to be taken by bathers, as stated below.

CAUTION

1. Elderly persons, pregnant women, infants and those with health conditions requiring medical care should consult with a physician before entering a spa.
2. Unsupervised use by children under the age of 14 is prohibited.
3. Hot water immersion while under the influence of alcohol, narcotics, drugs or medicines may lead to serious consequences and is not recommended.
4. Do not use alone.
5. Long exposure may result in nausea, dizziness or fainting.

4. **No Lifeguard On Duty** - A "Warning - No Lifeguard on Duty" sign must be posted at all swimming pools where lifeguard service is not provided.
5. **No Diving Allowed** - A "No Diving Allowed" sign must be posted at all swimming pools not designed for diving.
6. **Pool and Spa Capacity** - A sign must indicate the maximum number of swimmers/bathers allowed in the pool/spa.
7. **Warning Sign for Pools Using Gas Chlorine** - A sign must be posted on the entry door to the chlorine room.

DANGER

Gaseous Oxidizer Chlorine

8. **Spa Emergency Shut-off** - A sign must be posted designating the location of the emergency shut-off switch.
9. **No Use of Pool Allowed After Dark** - Where pool lighting fixtures are not provided, a sign with clearly legible letters not less than 4 inches high shall be posted in a prominent place near each entrance to the pool area.This sign shall state "No Use of Pool Allowed After Dark".

Depth Markings

Water Depth - Pools must be marked at maximum and minimum depth, at the break in bottom slope, and at each end. Water depth at the shallow end of the pool must not exceed 3½ feet. A straight line of slip resistant tile of a contrasting color shall be installed across the bottom of the pool at 4½ feet.

Fencing and Gates

In order to restrict access to the pool by small children, an enclosure (fence) must be provided around the pool area. The pool enclosure must meet the following criteria:

1. **Size** - The enclosure shall be at least five feet in height on all sides with maximum openings of four inches between rungs or slats. Local building departments may have more stringent requirements.

2. **Gates/Doors** - Gates and doors leading into the pool area must be self-closing and self-latching. The latching device shall be located at least 3-1/2 feet (42 inches) above the deck.
3. **Design/Construction** - The pool enclosure shall be designed and constructed so that it cannot be easily climbed by small children. Special care should also be taken to make sure that climbable bushes and trees are not planted next to the enclosure.
4. It is strongly recommended that **existing pools** be fenced to reduce the risk of children gaining accidental entry. This Department must be consulted prior to installing a fence on an existing pool to ensure that all requirements will be met.

Safety Recommendations

Diving - Swimmers should never dive into water which is not approved for diving. Diving into deeper water could also be hazardous to swimmers who are not familiar with safe diving practices.

Cardiopulmonary Resuscitation (CPR) - It is strongly recommended that pool operators and employees learn CPR and proper pool rescue procedures. For information on CPR classes, contact your local American Red Cross or American Heart Association.

Chemical Handling - Oxidizing chemicals, such as chlorine, should never be stored next to corrosive chemicals, such as muriatic acid and sodium bisulfate, and should be stored away from heat sources. When mixing chemicals with water, always add the chemical to the water–never add water to the chemical because a poisonous gas may be released or an explosion may occur.

MAINTENANCE

Cleaning and Maintenance

Keep all pool facilities and equipment in good repair.

1. Keep floors free from cracks and other defects. Floors must be non-skid.
2. Refinish walls, ceilings, partitions, doors, lockers and equipment as often as necessary to keep them in good condition, smooth and cleanable.
3. Provide hoses for regular flushing and cleaning. The pool area must be kept clean, sanitary, and free of litter and vermin. Backflow prevention device to hose bib is required.
4. Keep all toilets, urinals, showers, wash basins and other plumbing fixtures clean, and in good repair. Hot and cold running water and soap must be provided.
5. Do not allow floating scum or other debris to accumulate in the pool. Maintain water levels at middle of skimmer. Skimming system is to remove material continuously.
6. Keep the sides and bottom of pools, decks, and other surfaces free of slime and algae, and clean them as often as necessary.
7. Animals are not permitted in the pool or areas around the pool.

RECIRCULATION

Recirculation System

The filtration and disinfection systems remove floating or suspended matter from the water and control the growth of bacteria. Keep all parts of the water purification system in operation whenever the pool is in use. When the pool is **not** in use, the pool water purification system should also be used, as necessary, to maintain the pool water in a clear and disinfected condition. Each of the following operates as an important part of the recirculation system:

1. **Skimmers** - The skimmer, as the name implies, skims leaves and other debris from the surface of the water. Since most of the contaminants in a pool are located on the surface of the water, 75% of the water flow should be drawn through the skimmers. All skimmers must function properly for the system to work properly.
2. **Main Drain** - The main drain serves two purposes. First, as a suction outlet for the filtration system, and second, as a means for draining the pool.
3. **Pump** - The pump is the heart of the recirculation system. It draws water from the pool through the skimmers and main drain, and then pushes it through the rest of the recirculation system and back to the pool. Pumps must be sized correctly to enable recirculating, filtering, and disinfecting within the required turnover time.

They must be located in a readily accessible place. A drain and lint catcher is required on the suction line of the recirculation pump, and must be maintained clean and secure.

4. **Filter** - The filter removes very small particles from the water. As the water passes through the filter vessel, the particulate matter sticks to the filter. The two types of filters most commonly used are diatomaceous earth and sand. The filter must be cleaned, or backwashed as needed, to continue clarifying the water. Functional influent and effluent pressure gauges can help determine when to clean the filter. Filters must be correctly installed, easily disassembled, and resist electrolytic corrosion. They must not allow passage of unfiltered water and must be in operation during pool use. Installation must allow for individual filters to be repaired or backwashed. All swimming pools must be filtered in 6 hours or less to maintain clean and clear water; all wading pools must be filtered in one hour and all spas must be filtered in 30 minutes.

5. **Chlorinator** - An automatic chlorinator must be installed on each recirculation system to continuously disinfect the water. Liquid, and tablet chlorine feeders are the most common types of automatic chlorinators. For safety reasons, chlorinators which float on the surface of the pool water, or chlorine tablets placed in skimmers cannot be used. Chlorinators must not corrode, stop up, and must be easily disassembled. It must supply at least 3 pounds of chlorine per day for every 10,000 gallons of pool capacity.

6. **Gauges:** Influent and effluent pressure gauges must be installed at the same eye level.

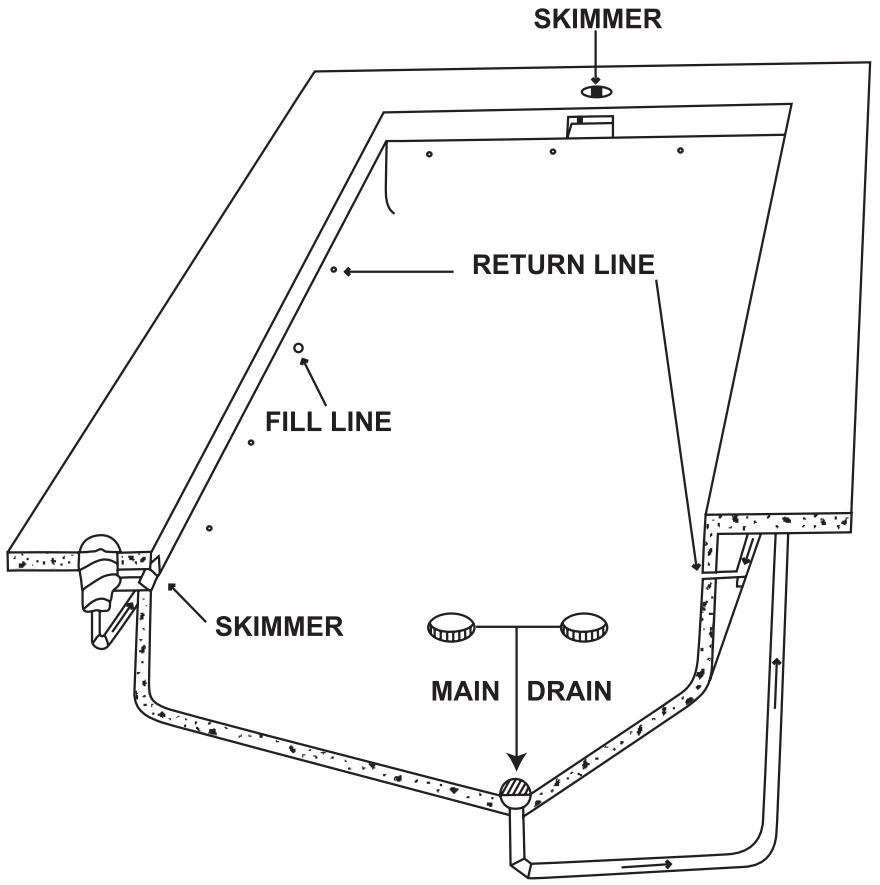
7. **Flowmeter:** An accurate flowmeter must be properly installed on the recirculation piping system. To calculate for the minimum required flow rate:

   Pool volume in gallons divided by 360 minutes.
   Spa volume in gallons divided by 30 minutes.
   Wading pool in gallons divided by 60 minutes.

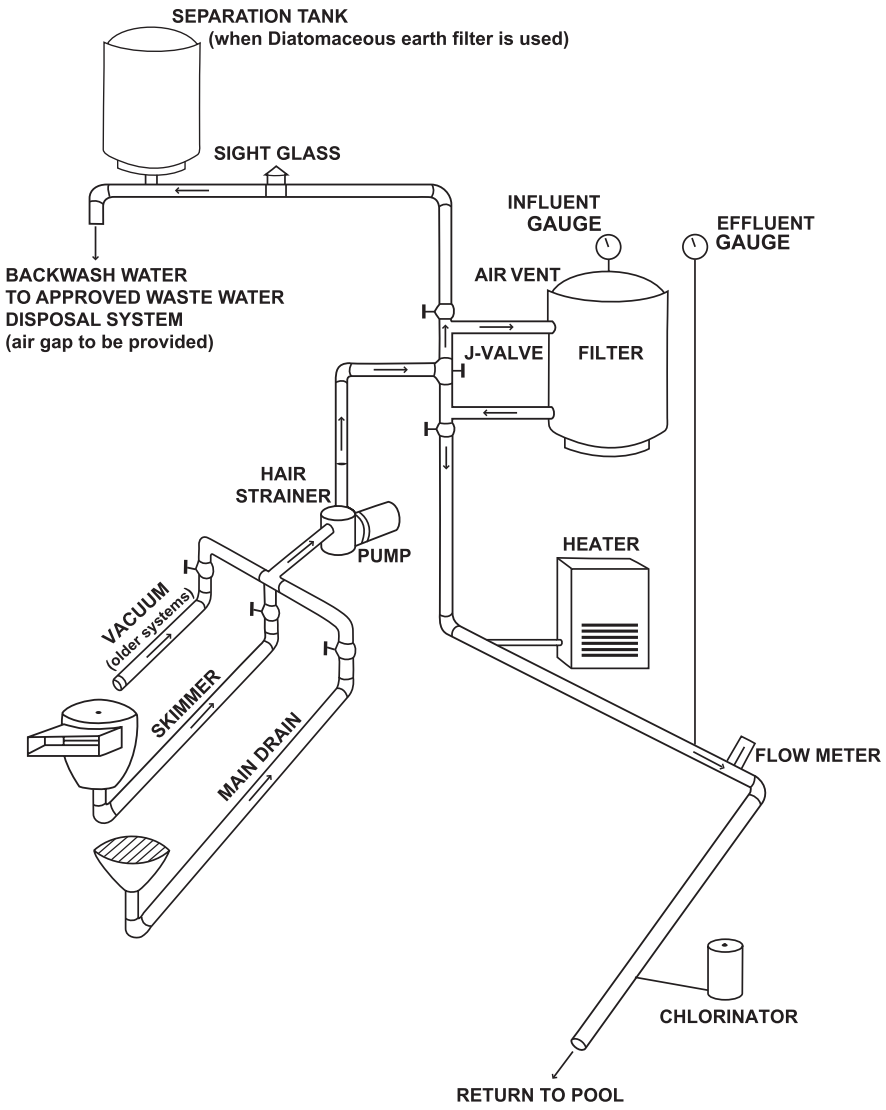
   Flow rate to be monitored daily to ensure proper turnover.

8. **Circulation outlets:** Circulation outlets must be covered with grates or safety covers, removable only with tools, and have openings no greater than 1/2 inch.

BASIC SWIMMING POOL



BASIC PIPING AND EQUIPMENT

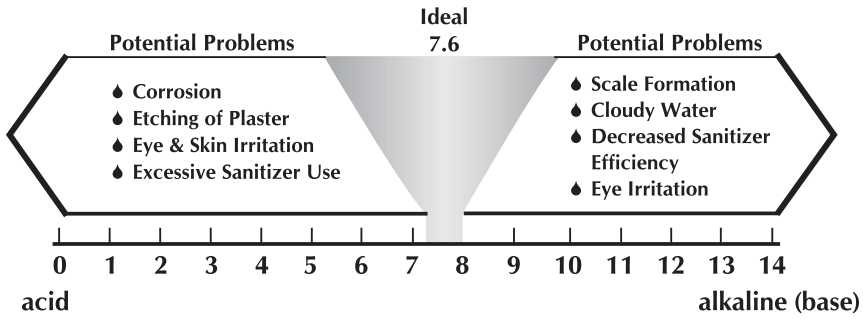


Water Balance

Maintaining a proper water balance means more than just dumping chlorine and acid into the pool. Each chemical that is added to the water interacts with other chemicals present. Factors such as chlorine residual, pH, total alkalinity, calcium hardness, total dissolved solids, and water temperature must be assessed and properly balanced to keep the water safe. It is very important to have a test kit readily available which can accurately measure free chlorine residual, and pH levels, so that the pool owner or manager can assure that proper disinfectant levels are maintained between visits by the pool service company. Frequent testing of the water is critical to keep the pool water in proper chemical balance. Daily operational records must be kept for each pool, noting the chemical readings and maintenance procedures. Free blank daily operational record forms may be obtained from any DEHS office.

Chlorine - Without an adequate chlorine residual in the water, bacteria will thrive and increase the risk of bathers becoming ill. A free available chlorine residual of at least 1.5 parts per million (ppm) must be constantly maintained if cyanuric acid is used in the pool. If cyanuric acid is not used, a free available chlorine residual of at least 1.0 ppm must be maintained.

pH - pH is a measure of the acidity or alkalinity of the pool water. The legal pH range for pool water is 7.2 - 8.0, which is slightly basic on the pH scale. For more effective use of the chlorine in the water, a pH of 7.4 - 7.8 is recommended.

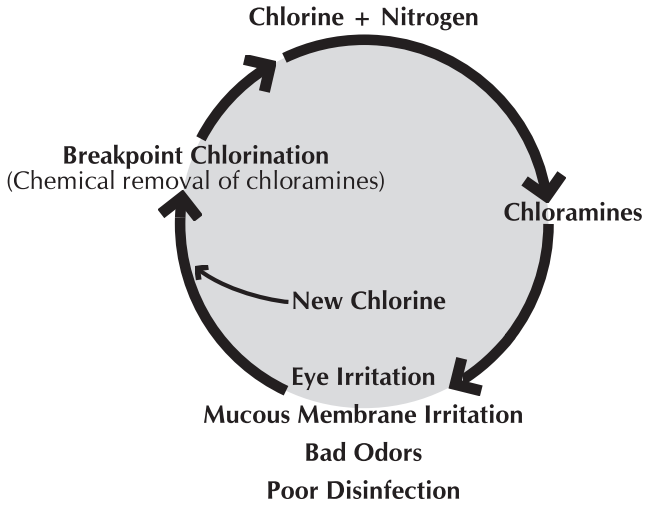


pH Scale

Cyanuric Acid - Cyanuric acid, which is also known as the conditioner or stabilizer, is a chemical which protects the free available chlorine residual from the effects of sunlight. The ideal level of cyanuric acid is 30-50 ppm. The maximum legal level of cyanuric acid in the pool is 100 ppm. The best way to lower the cyanuric acid level in the pool is to partially drain the pool and add fresh water.

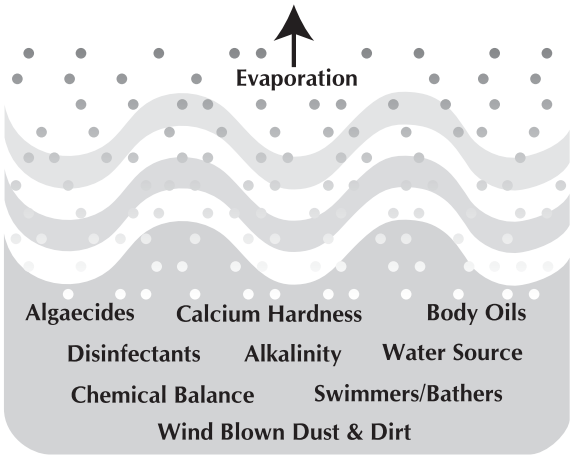
Hardness - Hardness is the total amount in ppm of minerals in the water. Calcium and magnesium make up a majority of the hardness content. Water hardness levels above 400 ppm may cause scaling in the pipes, in the heater or on the pool plaster. Check with your pool serviceman to determine the best way to lower the calcium hardness level in your pool.

Chloramines - When free available chlorine combines with ammonia and nitrogen compounds, chloramines are formed. Chloramines, which are also called combined chlorine, cause most of the eye irritation and odor complaints from bathers. To eliminate chloramines from the pool, additional chlorine must be added. The amount of chlorine added, (the breakpoint level) should be about five to ten times greater than the amount of combined chlorine measured in the pool water.



Total Dissolved Solids (TDS) - TDS is the amount of all materials dissolved in the pool water which would be left behind if all the water was evaporated. TDS levels above 2,000 ppm may reduce the effectiveness of the chlorine and can also cause increased cloudiness of the pool water.

To reduce the TDS level, the pool should be partially drained and fresh water added. Total Dissolved Solids are introduced into the pool water by:



Heavily used spas may need to be drained daily or weekly.

Spa Temperature

Maximum spa temperature is 104°F.

QUALITY

Water Quality

The importance of maintaining a bacteriologically safe pool cannot be overestimated. Bacteria, which are microscopic organisms, are normally brought into the pool by bathers, dust, leaves, wind and rain. Many of these bacteria can cause illness in bathers. By maintaining a proper free available chlorine residual and proper water balance in the pool, bacteria entering the pool will be destroyed.

The control of algae in the pool is also important for the overall health and safety of the bathers. Algae are microscopic plant life that may be introduced into the pool by wind, rain, leaves, dust or even fresh fill water. Algae can cause green water, slippery growths on pool surfaces, and can also make it difficult to see swimmers in distress. In addition, when algae are present, much of the free available chlorine in the pool is used to control the algae instead of being available to destroy bacteria. The most common form of algae found in pools, black algae, typically appear as black specks on the sides and bottom of the pool. Although difficult to eliminate, algae can be eradicated from the pool through proper use of algaecides, superchlorination, and persistence.

HEALTH

Health of Employees and Bathers

1. No one with an infectious disease is allowed to be employed at a public swimming pool.
2. Any swimmer or bather suspected of having an infectious disease, or having a cough, cold sores, or wearing bandages, shall not be admitted into a public swimming pool unless:
   - ❖ The bather submits a current written statement, signed by a licensed physician, confirming that the swimmer does not present a health hazard to other pool users, *or*…
   - ❖ Pool use by the swimmer is approved by this Department.

CLOSURE

Pool Closure

A public pool may be closed by this Department if it is being operated in a manner which creates an unhealthful, unsafe, or unsanitary condition, and will not be reopened until corrections are made. Pools and spas must meet all standards for clarity, disinfection, pH, safety, and bacteriology.
*The pool may be closed if the following conditions exist:

1. A free chlorine residual below 1.0 ppm.
2. A free Chlorine residual above 10 ppm.
3. A pH reading below 7.2 or above 8.0.
4. Poor water clarity (the main drain cover must be clearly visible from the pool deck).
5. Main drain cover is loose, damaged, missing or is an entrapment/ suction hazard.
6. Water temperature above 104°F.
7. Sharp objects or other unsafe or hazardous condition in the pool enclosure area.
8. Electrical hazard.
9. Feces or vomitus in the water.
10. Non-functioning recirculation system.

* The pool should also be closed by the pool operator when chemicals are added to the water.

These public pool and spa standards are for the protection of the swimmers and bathers. Contact your pool inspector for any questions you may have about these standards.

Pool and Spa Finishes

Pools must be finished in white and may not have designs on the bottom or sides which simulate a human form. Spas may be finished in white or light pastel shades.

Decking

An unobstructed, non-slip, concrete walk or deck at least 4 feet wide shall extend completely around the pool.

Diving Boards

Diving boards must have at least 15 feet of unobstructed headroom above the board extending 10 feet beyond the front of the board. Diving boards must be substantially constructed and have non-slip, corrosion resistant, cleanable steps.